An exercise program led to a slower decline in activities of daily living in nursing-home patients with Alzheimer disease

Rolland Y, Pillard F, Klapouszczak A, et al. **Exercise program for nursing home residents with Alzheimer's disease: a 1-year randomized, controlled trial.** J Am Geriatr Soc. 2007;55:158-65.

Clinical impact ratings: Geriatrics ★★★★★★☆ Neurology ★★★★★☆☆ Phys Med & Rehab ★★★★★★☆

QUESTION

In patients with Alzheimer disease (AD) in nursing homes, does an exercise program slow the decline in ability to do activities of daily of living (ADLs)?

METHODS

Design: Randomized controlled trial.
Allocation: Concealed.*
Blinding: Blinded (outcome assessors and {data analysts}†).*
Follow-up period: 12 months.
Setting: 5 nursing homes in Toulouse, France.
Patients: 134 patients who were 62 to 103 years of age (mean age 83 y, 75% women), met the National Institute of Neurological and Communicative Diseases and Stroke/Alzheimer Disease and Related Disorders Association criteria for probable or possible AD, had lived in the nursing home for ≥ 2 months, and were able to transfer from a chair and walk ≥ 6 meters without human assistance. Exclusion criteria were vascular dementia or Parkinson disease, surgery in the coming year, cardiac condition that could worsen with exercise, or terminal illness with life expectancy < 6 months.
Intervention: Exercise (n = 67) or routine medical care (n = 67). Patients in the exercise group were divided into small groups of 2 to 7 (mean 5) patients according to physical, cognitive, and behavioral performance. The exercise program was individualized and included aerobic, strength, flexibility, and balance training. At least half of each session consisted of walking. The sessions were held for 1 hour in the afternoon twice a week, with ≥ 2 days between exercise sessions.
Outcomes: Decline from baseline in Katz ADL score (range 0 [dependent] to 6 [independent]).
Patient follow-up: 82% (100% included in the intention-to-treat analysis).

MAIN RESULTS

At 12 months, patients in the exercise group showed less decline in performance of ADLs than did patients in the routine medical care group (Table). Exercise and routine medical care did not differ for number of falls (139 vs 136), fractures (5 vs 2), or deaths (7 vs 8).

CONCLUSION

In nursing-home patients with Alzheimer disease, an exercise program led to a slower decline in the ability to do activities of daily living.

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*See Glossary.

†Information provided by author.

Exercise vs routine medical care for patients with Alzheimer disease in nursing homes‡

Outcomes at 12 mo	Mean score decrease from baseline		Difference in mean score decrease	*P* value
	Exercise	Routine medical care		
Katz ADL score§	0.6	0.9	0.3	0.02

‡ADL = activities of daily living.
§High score = more independent.

COMMENTARY

The cholinesterase inhibitor donepezil significantly slows decline in ADLs in nursing-home patients with severe AD (1). Exercise also may slow ADL loss through relative preservation of cognitive function rather than through improvement of physical performance. Rolland and colleagues found no statistically significant differences between the exercise and control groups in the change scores for individual ADLs, suggesting that the differential decline in overall ADL function was not driven by differences in physical performance. Several large-scale cohort studies have shown less cognitive decline in older persons with high activity compared with those with low physical activity (2). After 5 years of follow-up in the Canadian Study of Health and Aging, the most active participants were 50% less likely to develop AD and 37% less likely to develop any form of cognitive impairment than the least active participants (3). The mechanism by which exercise retards cognitive decline is unknown.

In the present study, patients assigned to a moderate, twice-weekly exercise program experienced less decline in ADLs than the usual-care group, although one third of the patients attended fewer than one third of the sessions. Post hoc analysis showed that the amount of decline was inversely correlated with the number of sessions attended. The relative risk reduction (RRR) for ADL loss at 1 year in the exercise group was 33%. This compares favorably with an RRR of 48% for ADL loss in nursing-home patients with advanced AD randomized to donepezil or placebo for 6 months (1). Although the absolute risk reduction for the exercise group was small, the study did not address the effect of this difference on staff effort. Even small reductions in ADL independence can translate into significant increases in the time required by staff to assist patients.

While this study did not address cost-effectiveness, implementing a structured exercise program for nursing-home patients with severe dementia may be cost-effective when compared with cholinesterase inhibitors, particularly once staff time and the cost and potential side effects of cholinesterase inhibitors are factored into the analysis.

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